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DOCUMENT-IDENTIFIER: US 5903871 A
TITLE: Voice recording and/or reproducing apparatus

Detailed Description Text (12):
That is, the main control circuit 8 is coupled to a fixed information storing portion 21 in which information unique to the voice recording and reproducing apparatus is stored before the voice recording and reproducing apparatus is shipped. The main control circuit 8 controls the reading of the fixed information out of the fixed information storing portion 21, and the writing of the fixed information, directly or after being properly processed, into a recording medium 10 comprising an IC memory detachably coupled to or included within the voice recording and reproducing apparatus.

Detailed Description Text (22):
The recording medium 10 as an IC memory includes a temporal recording medium portion and a main recording medium portion. The temporal recording medium portion adopts a static random access memory (hereinafter called "SRAM"), an electrically erasable and programmable read only memory (EEPROM), a high-dielectric memory, a flash memory, or the like, which the data can be read from and written in at a higher speed than the main recording medium portion. The main recording medium portion uses a flash memory, a magneto-optical disc, a magnetic disc, magnetic tape, or the like. In the voice recording and reproducing apparatus of the first embodiment, the SRAM is adopted for the temporal recording medium portion, and the flash memory is adopted for the main recording medium portion.

Detailed Description Text (23):
The address indicating the recording position of voice information may be stored in the recording medium 10 as the IC memory detachably coupled to the main control circuit 8 or an internal recording medium (not shown) as an IC memory associated with the address control circuit 9 located in the recording and reproducing apparatus.

Detailed Description Text (58):
This voice recording and reproducing apparatus 51 comprises the microphone 31 for converting a voice to an analog electric signal. An amplifier 32 amplifies the analog signal transmitted from the microphone 31. A low-pass filter 33 passes only a predetermined low frequency band of the amplified analog signal transmitted from the amplifier 32. An A/D converter 34 converts the analog signal filtered through the low-pass filter 33 to a digital signal. A DSP 35 functions as a data compression means for compressing the digital signal when recording, and as a data decompression means for decompressing the digital signal when reproducing. A system controller 36 performs, in response to the operations of below-mentioned operating buttons and switches, the control of the whole system including the control of the operations of the DSP 35, a memory card controller 37, and a flash memory card 38. The system controller 36 is an element of a file creating means, a file selecting means, an index information recording means, an index information reading means, and a file identification detecting means. The memory card controller 37 functioning as a memory card controlling means controls the flash memory card 38 when a proper address signal is supplied from the system controller 36, to record, in a predetermined format, voice data supplied from the DSP 35 through the system controller 36, or read out the recorded data and supply it to the DSP 35 through the system controller 36. The flash memory card 38 is used as a recording medium, which is, for example, an IC memory. The flash memory card 38 is detachably installed in the voice recording and reproducing apparatus 51 and coupled to the memory card controller 37. A D/A converter 41 converts to an analog signal the digital signal read out from the flash memory card 38 and decompressed by the DSP 35. A band-pass filter 42 cuts off an unnecessary frequency band of the analog

signal outputted from the D/A converter 41. An amplifier 43 amplifies the analog signal filtered through the band-pass filter 42. The speaker 44 converts to a voice the amplified analog signal outputted from the amplifier 43. A display 39 displays information, such as an operation mode, a file number or the like, under the control of the system controller 36. An electric power source 40 supplies electric power to the voice recording and reproducing apparatus 51 under the control of the system controller 36. An operating portion 45 is coupled to the system controller 36.

Detailed Description Text (100):
Specifically, this optional menu is used to set erroneous erasure prevention, microphone sensitivity, a user identification code, an order of priority, a clock or the like. When the up button UP and the down button DOWN are pressed without pressing the menu button MENU, the volume of reproduced voice can be adjusted.

Detailed Description Text (107):
The structure of the voice reproducing apparatus is as follows: The flash memory card 38 is detachably coupled to the voice reproducing apparatus. A memory card controller 87 is coupled to the flash memory card 38 for controlling the flash memory card 38 in response to a proper address signal supplied by a system controller 86. A memory 94 is incorporated in the voice reproducing apparatus and functions as a storage medium for storing only an voice file transmitted from the flash memory card 38 through the memory card controller 87 under the control of the system controller 86. In response to the operations of below-mentioned operating buttons and switches, the system controller 86 performs the control of the whole system including the control of the operations of a DSP 35, the memory card controller 87, the flash memory card 38, and the incorporated memory 94. The system controller 86 is an element of a file selecting means, an index information reading means, and a file identification detecting means, a file transfer means, and a file erasing means. The DSP 85 functions as a data decompression means for decompressing data in the voice file transmitted from the incorporated memory 94 under the control of system controller 86 when reproducing. A D/A converter 81 converts to an analog signal the read-out data decompressed by the DSP 85. A band-pass filter 82 cuts off an unnecessary frequency band of the analog signal outputted from the D/A converter 81. An amplifier 83 amplifies the analog signal filtered through the band-pass filter 82. A switch 92 selects a device to which the signal from the amplifier 83 is outputted. A speaker 84 converts to a voice the signal transmitted via the switch 92. An earphone jack 93 outputs the signal from the switch 92 to an earphone or the like. A display 89 displays information, such as an operation mode, a file number or the like, under the control of the system controller 86. An electric power source 90 supplies electric power to the voice reproducing apparatus under the control of the system controller 86. An operating portion 91 is coupled to the system controller 86.

Detailed Description Text (125):
In step S111, it is determined whether any voice file has been recorded in the detachable flash memory card 38 coupled to the memory card controller 87. If no voice file has been recorded, an error message is displayed on the display 89 in step S113 to exit from the voice file transfer process.

Detailed Description Text (138):
If the erroneous erasion preventing flag has been turned on, an alarm indicating that the erasion cannot be implemented is outputted in step S136 and the process goes to step S112. On the other hand, if the flag has been turned off, the transferred file in the flash memory card 38 is erased in step S135 and the process goes to step S112.

Detailed Description Text (139):
It can be selected by the optional menu whether the transferred file in the flash memory card 38 is retained or automatically erased after the transfer process is completed. If the automatic erasion after transfer is selected, the same file will not be recorded in duplicate in the separate memories so that the memory space can be saved.